

SERIAL No. 10/711,503  
ATTORNEY DOCKET NO. TSMC 2003-1622

**REMARKS/ARGUMENTS**

Claims 1-26 were originally filed in the present Application. In response to a Restriction Requirement made in the pending Office Action, Applicants have elected to prosecute Group I, claims 16-26, in the present Application, and has withdrawn Group II, claims 1-15, from consideration at this time, and the Applicants have now canceled these claims from the present Application. In the present Amendment, the Applicants have amended claim 16. Accordingly, claims 16-26 remain pending in the present Application.

**I. REJECTIONS UNDER 35 U.S.C. §102**

The Examiner has rejected claims 16-26 under 35 U.S.C. §102(b) as allegedly anticipated by U.S. Published Patent Application No. 2004/0036164 to Koike, *et al.* The Applicants respectfully disagree with the Examiner's allegation because Koike does not disclose each and every element of independent claim 16. Specifically, Koike does not disclose a semiconductor package device having an IC chip comprising, among other things, "a final thickness less than a thickness of the package substrate on which it is mounted, wherein the final thickness is selected so that the chip distorts substantially with the package substrate during temperature changes despite the mismatch in their respective coefficients of thermal expansion."

While Koike may disclose that the IC chip may have a thickness less than a thickness of the package substrate, Koike does not disclose precisely selecting that thickness so that the chip distorts substantially with the package substrate during temperature changes despite the mismatch in their respective coefficients of thermal expansion. The present invention is based, in part, on the recognition that IC chips and the package substrates on which they are mounted may not always have the same

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coefficients of thermal expansion. If such differences are present, then temperature changes that would cause the chip and/or substrate to distort would result in these two components distorting in different manners. Thus, solder bond breakage or delamination of the IC chip may occur because the two components would be distorting differently. As a result, the present invention claims the IC chip having a thickness less than the thickness of the package substrate, and selected so that, despite the difference in the coefficients of thermal expansion of these two components, the IC chip distorts in substantially the same way that the package substrate distorts.

No where in Koike is such a selection of thickness for the IC chip made. The Examiner cites to paragraph [0065] of Koike for this missing element, but this portion of Koike does not disclose this element. This portion of Koike only discloses that the IC chip may have a different thickness than the package substrate; however, the Applicants respectfully assert that the mere chance that there is a difference in thickness does not equate to a disclosure that the thickness of the chip is precisely selected so that it distorts substantially with the distortion in the substrate when these two components have differing coefficients of thermal expansion. Accordingly, Koike does not disclose all of the elements of independent claim 16, as well as its dependent claims, and the Applicant respectfully request that the Examiner withdraw these rejections.

## II. REJECTIONS UNDER 35 U.S.C. §103

The Examiner has also rejected claims 16-26 under 35 U.S.C. §103(a) as allegedly obvious over Koike. The Applicants also respectfully disagree with this assertion of the Examiner because Koike also does not teach or suggest all the element of independent claim 16. As discussed above, Koike does not teach a semiconductor package device

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having an IC chip comprising "a final thickness less than a thickness of the package substrate on which it is mounted, wherein the final thickness is selected so that the chip distorts substantially with the package substrate during temperature changes despite the mismatch in their respective coefficients of thermal expansion." Moreover, Koike does not suggest this missing element by merely teaching that the IC chip may end up having a different thickness than its package substrate. In fact, Koike makes no mention of potential differences in coefficients of thermal expansion between these components, and there is no recognition of the problems that can occur when temperature changes lead to distortion or either or both of these components during operation. Accordingly, the Applicants respectfully assert that independent claim 16 is not obvious in view of Koike, and therefore requests that these rejections also be withdrawn.

Finally, the Examiner has rejected dependent claim 19 under 35 U.S.C. §103(a) as allegedly obvious over Koike in view of U.S. Patent No. 6,559,525 to Huang. As discussed above, Koike does not teach or suggest all of the elements of independent claim 16, from which claim 19 depends. Huang does not provide this missing element, and is only relied upon for showing the use of a heat spreader on the IC chip. Thus, the Applicants also respectfully requests that the Examiner withdraws this rejection as well.

### III. CONCLUSION

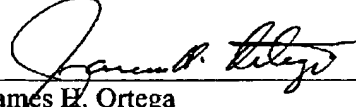
Applicants respectfully submit that pending claims 16-26 are in condition for allowance, and request a Notice of Allowability for the pending claims. The Examiner is invited to contact the undersigned Attorney of Record if such would expedite the prosecution of the present Application three-month response deadline is set to expire on April 10, 2006. As a result, no extension fee is believed due with this filing. However, if a fee is determined

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to be due, the Applicants hereby authorize the Commissioner to charge the necessary amount  
to Deposit Account No. 13-0480, referencing the Attorney Docket Number specified herein

Respectfully submitted,

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